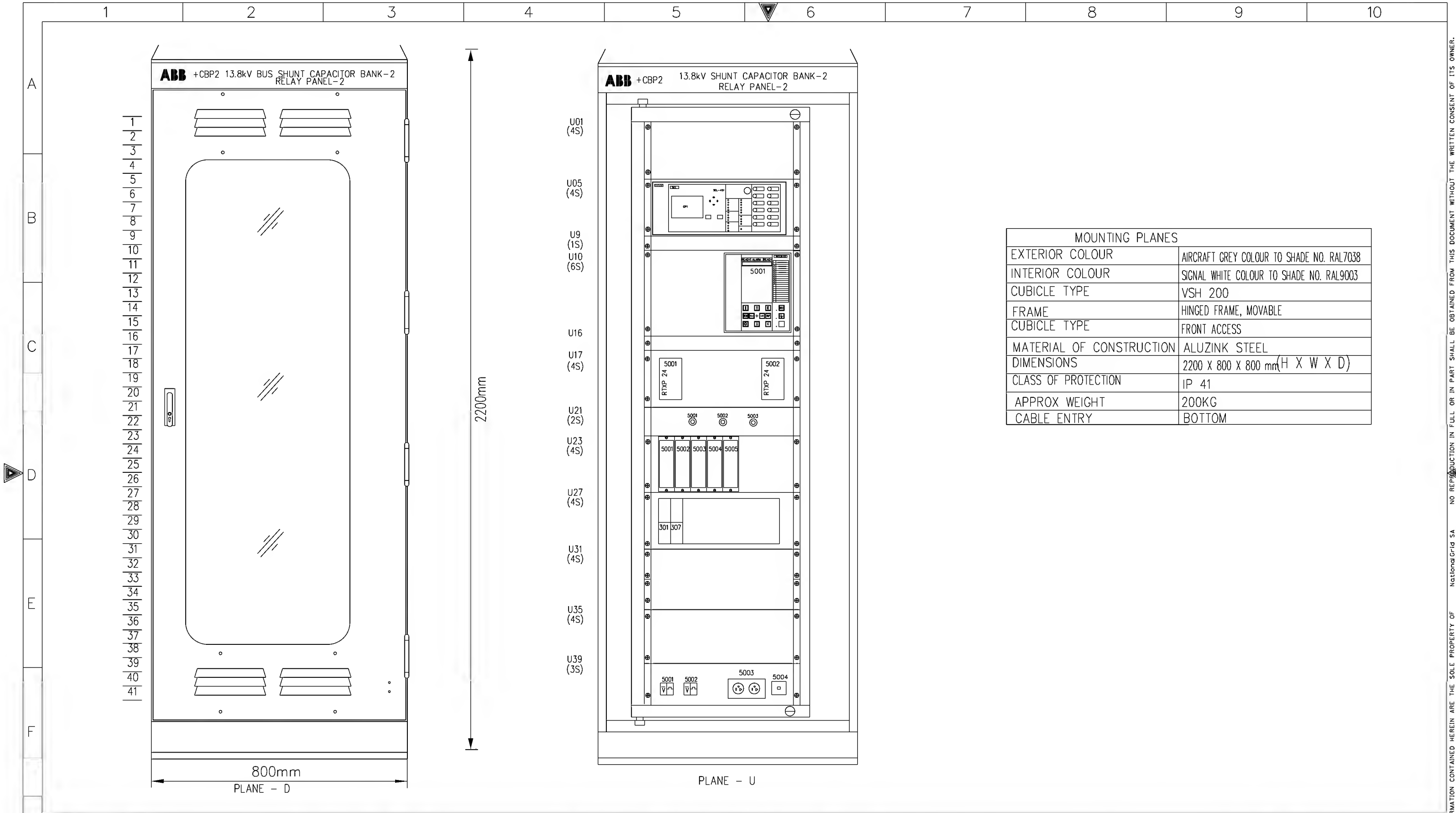

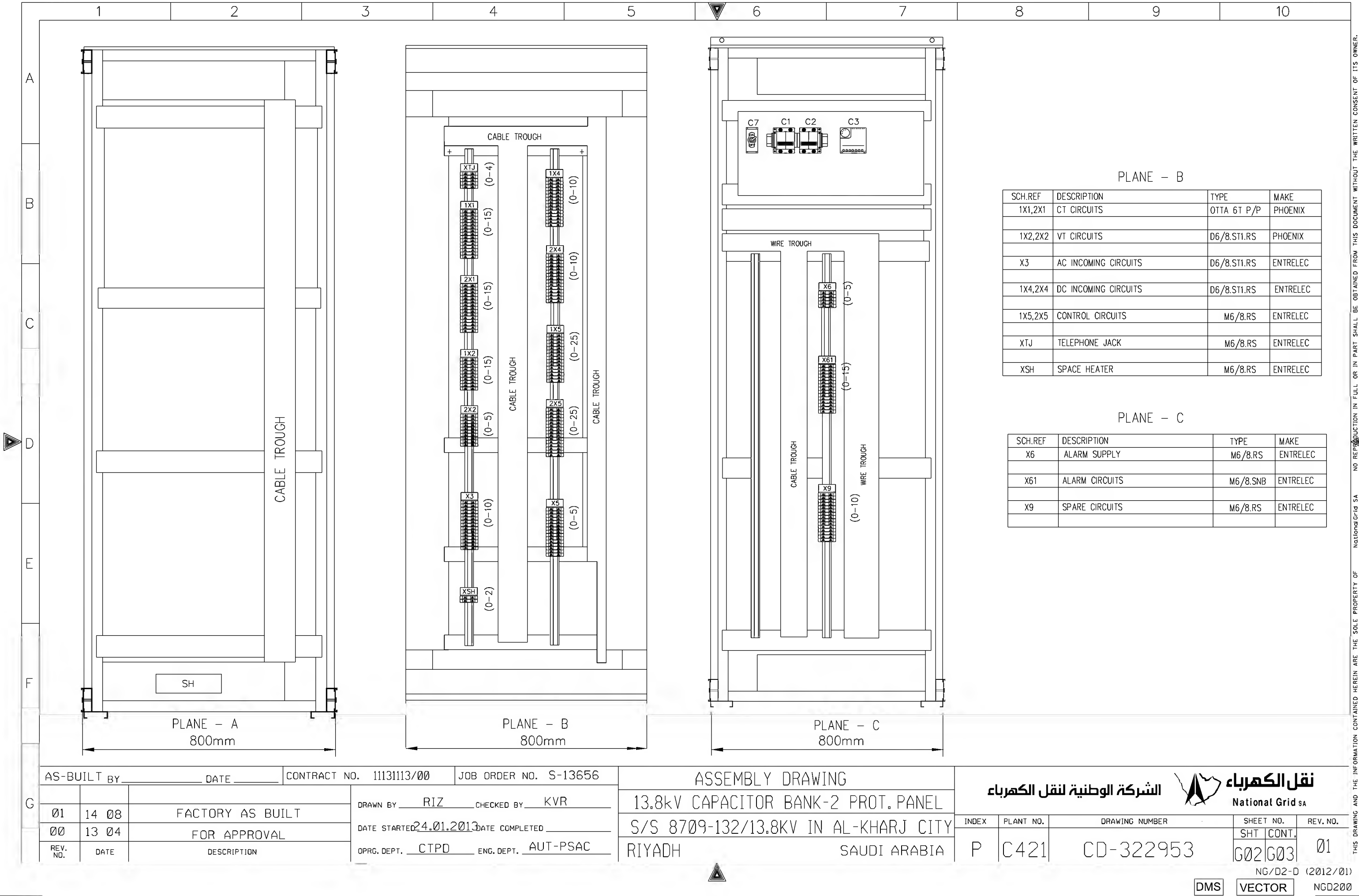


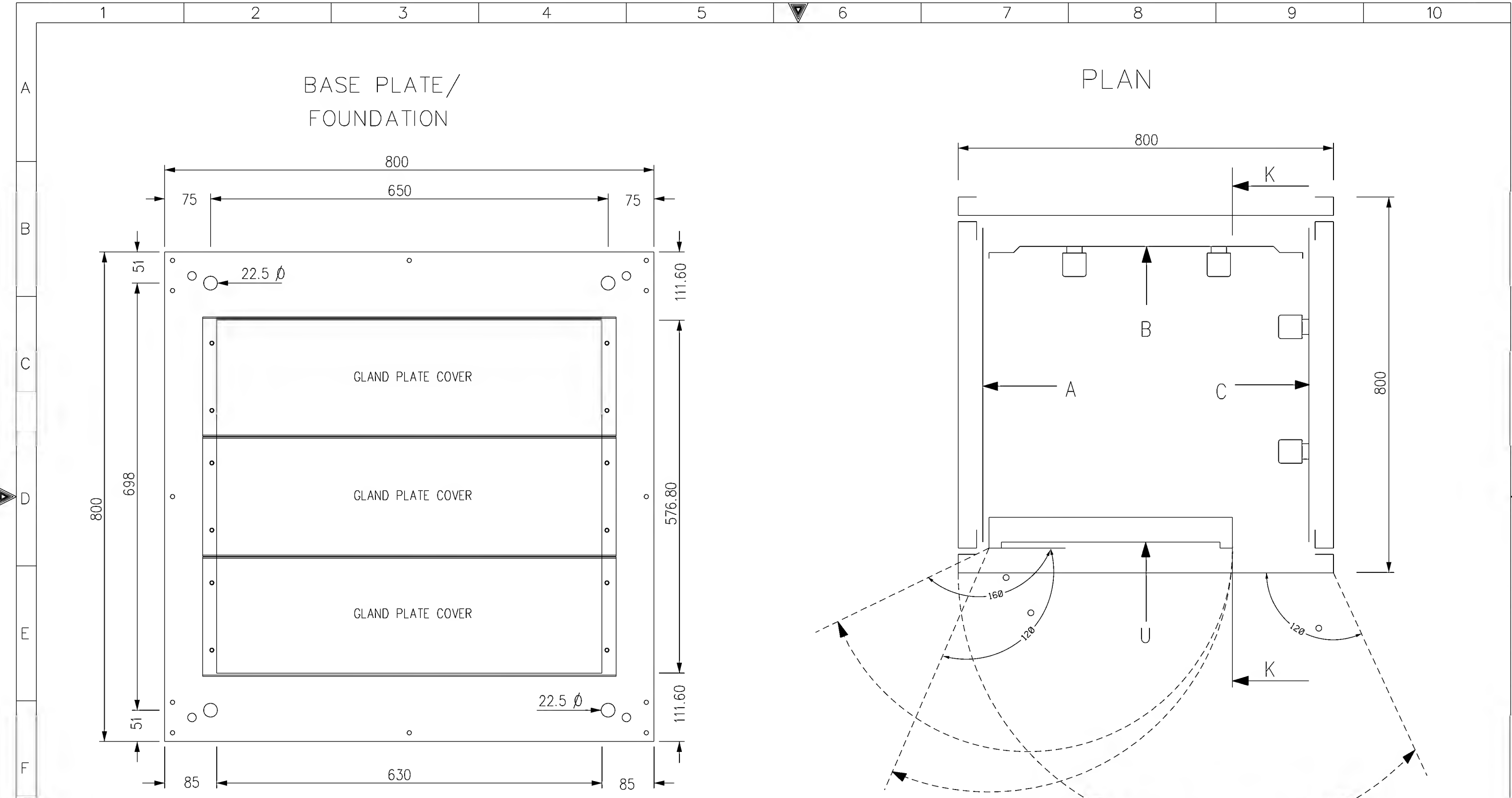
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A	<div><div>ABB</div><div>POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656</div></div>																																										
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	CLIENT : National Gridsa																																										
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E	CONTRACT NO. : 11131113/00																																										
F	TITLE : Assembly Drawing – +CBP2 [CAPACIT																																										
G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="2">COVER SHEET</td></tr><tr><td>01</td><td>14 08</td><td>FACTORY AS BUILT</td><td colspan="2">DRAWN BY RIZ</td><td colspan="2">CHECKED BY KVR</td><td colspan="2">13.8kV CAPACITOR BANK-2 PROT. PANEL</td></tr><tr><td>00</td><td>13 04</td><td>FOR APPROVAL</td><td colspan="2">DATE STARTED 24.01.2013</td><td colspan="2">DATE COMPLETED _____</td><td colspan="2">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td></tr><tr><td>REV. NO.</td><td>DATE</td><td>DESCRIPTION</td><td colspan="2">OPRG. DEPT. CTPD</td><td colspan="2">ENG. DEPT. AUT-PSAC</td><td colspan="2">RIYADH SAUDI ARABIA</td></tr></table>							AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET		01	14 08	FACTORY AS BUILT	DRAWN BY RIZ		CHECKED BY KVR		13.8kV CAPACITOR BANK-2 PROT. PANEL		00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA	
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			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		13.8kV CAPACITOR BANK-2 PROT. PANEL										
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	REV. NO.	DATE	DESCRIPTION										G01	G02	01
<div>NG/D2-D (2012/01)</div> <div><div>DMS</div><div>VECTOR</div><div>NGD200</div></div>															



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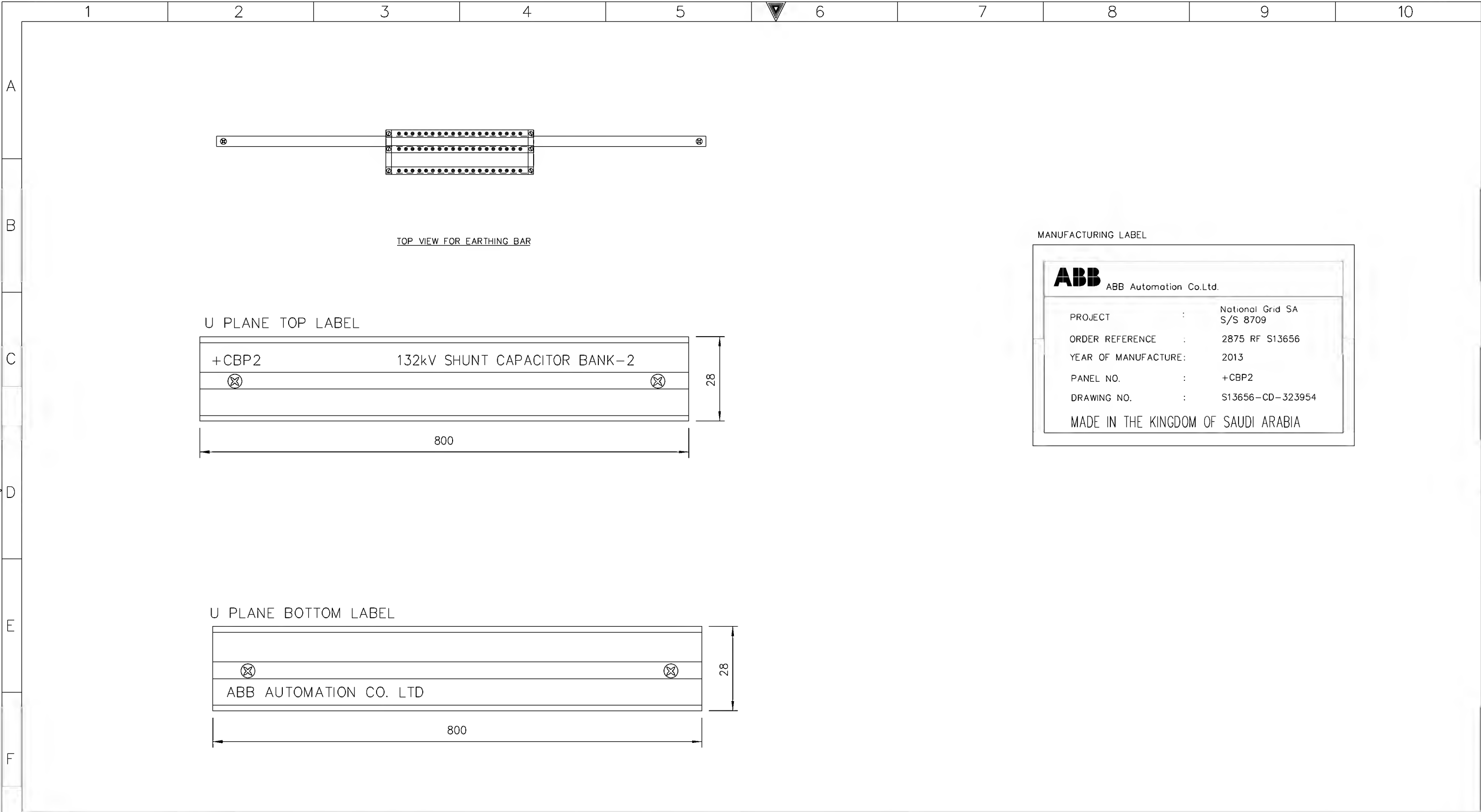
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REV. NO.	DATE	DESCRIPTION

DRAWN BY	RIZ	CHECKED BY	KVR
DATE STARTED	24.01.2013	DATE COMPLETED	
OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSAC

ASSEMBLY DRAWING
13.8kV CAPACITOR BANK-2 PROT. PANEL
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
P	C421	CD-322953	G03G04	01



MANUFACTURING LABEL

ABB ABB Automation Co.Ltd.

PROJECT : National Grid SA
S/S 8709

ORDER REFERENCE : 2875 RF S13656





YEAR OF MANUFACTURE: 2013

PANEL NO. : +CBP2

DRAWING NO. : S13656-CD-323954

MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء</div> <div>National Grid sa</div>						
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			OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		P	C421	CD-322953		SHT	CONT.	01		
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NG/D2-D (2012/01)


DMS VECTOR NGD200

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B				D E S C R I P T I O N		SHT NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	
				13.8KV SHUNT CAPACITOR BANK-2 PROTECTION PANEL							
	1	U05.5001	GP1	COMPRISING OF FOLLOWING: GROUP-1 PROTECTION FOR CAPACITOR BANK.		601	1	VSH 200 SEL451-2	ABB SEL USA	04515611XC2X4H324XXXX	
				RATED CURRENT : 1A, 60HZ							
				RATED VOLTAGE : 0-300V (PH-N)							
				AUX. SUPPLY : 125V DC							
				BINARY INPUTS : 15							
				BINARY OUTPUTS : 3 HIGH CURRENT INTERRUPTING							
				: 15 FORM A (NO)							
				: 5 FORM C (C/O)							
C				SIZE: 4U HIGH, SUITABLE FOR 19" RACK							
				FOLLOWING FUNCTION AVAILABLE							
				- PHASE OVERCURRENT							
				- RESIDUAL GROUND OVERCURRENT							
				- NEGATIVE SEQUENCE PHASE OVERCURRENT							
				- UNDER/OVER VOLTAGE							
				- CBF							
				- VT SUPERVISION							
				- CB MONITORING, OSCILLAGRAPH, EVENT RECORDER							
				FOLLOWING FUNCTION ARE ACHIEVED BY SELOGIC							
D				- DIRECTIONAL OVERCURRENT / DIRECTIONAL GROUND O/C							
				- DIRECTIONAL NEGATIVE SEQUENCE PHASE OVERCURRENT							
				- NEUTRAL UNBALANCE							
				- NEUTRAL DISPLACEMENT VOLTAGE COMPENSATED							
				- UNDER CURRENT							
				- THERMAL OVERLOAD							
	2	U10.5001	GP2	GROUP-2 PROTECTION FOR CAPACITOR BANK.		602	1	REC670	ABB	1MRK 002 814-AC	
				RATED CURRENT : 1A, 60HZ							
				RATED VOLTAGE : 110/220V							
				AUX. SUPPLY : 90-250V DC							
E				BINARY INPUT ENERGIZING VOLTAGE 110-125V DC							
				BINARY INPUT/OUTPUT MODULE = 1 (8 INPUTS + 10 OUTPUTS + 2 HIGH SPEED CONTACT)							
				BINARY OUTPUT MODULE = 1 (24 OUTPUT CONTACTS)							
				FOLLOWING FUNCTIONS AVAILABLE							
				- INSTANTANEOUS PHASE OVERCURRENT							
				- FOUR STEP PHASE OVERCURRENT							
				- INSTANTANEOUS RESIDUAL OVERCURRENT							
				- FOUR STEP RESIDUAL OVERCURRENT							
				- THERMAL OVERLOAD							
				- CBF							
F				- TWO STEP UNDER/OVER VOLTAGE							
				- TWO STEP RESIDUAL OVER VOLTAGE							
				- VOLTAGE DIFFERENTIAL (3-PH)							
				- FUSE FAILURE							
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa		
	01	14 08	FACTORY AS BUILT		DRAWN BY RIZ CHECKED BY KVR		13.8kv CAPACITOR BANK-2 PROT. PANEL		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.		
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		SHT CONT. 01		
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		P C421 CD-322953 L01L02		
										NG/D2-D (2012/01) DMS VECTOR NGD200	

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NG/D2-D (2012/01)
DMS VECTOR NGD200

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CONTACT R2 ± SUPPLY</td><td></td><td></td><td>S2-H02</td><td></td><td>GH S270 1916 R0003</td></tr><tr><td>16</td><td>U39.5003</td><td>C01,C02</td><td>CONVENIENCE OUTLET 10A, 127V, 220V AC</td><td>211</td><td>1</td><td>USM45 & USMS45</td><td>LEGRAND</td><td>74140 & 74180</td></tr><tr><td rowspan="3">D</td><td>17</td><td></td><td>DS</td><td>DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUM. LAMP</td><td>211</td><td>1</td><td>LS30P13B02</td><td>ABB</td><td>1SBV 010 213R 1202</td></tr><tr><td>18</td><td></td><td>IL</td><td>INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V 60HZ SUPPLY</td><td>211</td><td>1</td><td>T4</td><td>SUNON</td><td>SP-20W</td></tr><tr><td>19</td><td></td><td>C1,C2</td><td>MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET</td><td>211</td><td>2</td><td>S202P-P10</td><td>ABB</td><td>2CDS 252 001 R0427</td></tr><tr><td rowspan="3">E</td><td></td><td></td><td></td><td>WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS</td><td></td><td></td><td>S2C-H11L</td><td></td><td>GH S270 1917 R0001</td></tr><tr><td>20</td><td></td><td>SH</td><td>SPACE HEATER, 150W, 120V, 60Hz</td><td>211</td><td>1</td><td>RICA</td><td>GRUPPO</td><td>1FZEK006C001</td></tr><tr><td>21</td><td></td><td>C3</td><td>THERMOSTAT FOR SPACE HEATER, 5-60°C</td><td>211</td><td>1</td><td>SK 3110</td><td>RITTAL</td><td>SK 3110</td></tr><tr><td rowspan="3">F</td><td>22</td><td></td><td>C7</td><td>ON/OFF SWITCH FOR SPACE HEATER</td><td>211</td><td>1</td><td>M2SS1-10B</td><td>ABB</td><td>1SFA 611 200 R1006</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td>MCBH-10</td><td></td><td>1SFA 611 605 R1101</td></tr><tr><td>23</td><td>U39.5004</td><td>TJ</td><td>TELE PHONE JACK IGANG 4WIRE</td><td>211</td><td>1</td><td>EDF410</td><td>EDISON</td><td>EDF410</td></tr><tr><td rowspan="10">G</td><td colspan="9"></td></tr><tr><td colspan="9"></td></tr><tr><td colspan="9"></td></tr><tr><td colspan="9"></td></tr><tr><td colspan="9"></td></tr><tr><td colspan="9"></td></tr><tr><td colspan="9"></td></tr><tr><td colspan="9"></td></tr><tr><td colspan="9"></td></tr><tr><td colspan="9"></td></tr><tr><td colspan="10"><table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. 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NO.	LOCATION REF.	SCH REF.	D E S C R I P T I O N	SHT NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	14	U27.307	74R2	DC SUPERVISION RELAY	221	1	RXSF1	ABB	RK 271 019-AN			SPARE	AUX. VOLTAGE : 110-125V DC									CONTACTS : 1NO + 2NC PER COIL						C	15	U39.5001	Q1	MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUX. CONTACT R1 ± SUPPLY	216	2	S282 UC K6	ABB	GH S282 0164 R0317		U39.5002	Q2	MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUX. CONTACT R2 ± SUPPLY			S2-H02		GH S270 1916 R0003	16	U39.5003	C01,C02	CONVENIENCE OUTLET 10A, 127V, 220V AC	211	1	USM45 & USMS45	LEGRAND	74140 & 74180	D	17		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUM. LAMP	211	1	LS30P13B02	ABB	1SBV 010 213R 1202	18		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V 60HZ SUPPLY	211	1	T4	SUNON	SP-20W	19		C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET	211	2	S202P-P10	ABB	2CDS 252 001 R0427	E				WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS			S2C-H11L		GH S270 1917 R0001	20		SH	SPACE HEATER, 150W, 120V, 60Hz	211	1	RICA	GRUPPO	1FZEK006C001	21		C3	THERMOSTAT FOR SPACE HEATER, 5-60°C	211	1	SK 3110	RITTAL	SK 3110	F	22		C7	ON/OFF SWITCH FOR SPACE HEATER	211	1	M2SS1-10B	ABB	1SFA 611 200 R1006							MCBH-10		1SFA 611 605 R1101	23	U39.5004	TJ	TELE PHONE JACK IGANG 4WIRE	211	1	EDF410	EDISON	EDF410	G																																																																																											<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. 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			04	05																				
FOR APPROVAL			DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY																			
DESCRIPTION			OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA																			

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LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
U05.5001	U05.5001 GP1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U10.5001	U10.5001 GP2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U17.5001	U17.5001 TS-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U17.5002	U17.5002 TS-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U21.5001	U21.5001 PB11	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U21.5002	U21.5002 PB22	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U21.5003	U21.5003 PB21	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U23.5001	U23.5001 86C-1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U23.5002	U23.5002 94-1	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U23.5003	U23.5003 86CBF	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U23.5004	U23.5004 86C-2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U23.5005	U23.5005 94-2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X10mm	3mm
U27: 301	U27.301 74R1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U27: 307	U27.307 74R2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm

AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	14 08	FACTORY AS BUILT	DRAWN BY RIZ CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

LIST OF APPARATUS

13.8kV CAPACITOR BANK-2 PROT. PANEL

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
P	C421	CD-322953	SHT L05 CONT. L06	01

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B										
C										
D										
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LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
C1	C1 127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C2	C2 220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C3	C3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C7	C7 ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
DS	DS DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
IL	IL ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
SH	SH SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm





AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	14 08	FACTORY AS BUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ	CHECKED BY KVR
DATE STARTED 24.01.2013	DATE COMPLETED
OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

LIST OF APPARATUS
13.8kv CAPACITOR BANK-2 PROT. PANEL
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
P	C421	CD-322953	L06	NIL	01

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A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD. 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																										
B																																																																		
C	CONTRACTOR : ABB Contracting Company																																																																	
	CLIENT : National Gridsa																																																																	
D	PROJECT : CONSTRUCTION OF NEW 132/13.8kv SS 8709 IN AL-KHARJ CITY																																																																	
	SUBSTATION : S/S 8709																																																																	
E	CONTRACT NO. : 11131113/00																																																																	
	TITLE : SCHEMATICS DRAWINGS +CBP2 (SHUNT CAPACITOR BANK-2)																																																																	
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DMS

VECTOR

NG/D2-D (2012/01)
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AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CONTENTS SHEET		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>		
01 14 08		FACTORY AS BUILT		DRAWN BY RIZ CHECKED BY KVR		13.8kV CAPACITOR BANK-2 PROT. PANEL		INDEX PLANT NO. DRAWING NUMBER		SHEET NO. REV. NO.
00 13 04		FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		P C421 CD-322954		001 011 01
REV. NO. DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				
										NG/D2-D (2012/01)
										DMS VECTOR NGD200

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LEGENDS

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±R3

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FL

BB RS±

BB CBF±/CBF±

DC SUPPLY – MAIN PROTECTION

DC SUPPLY – SECONDARY PROTECTION

DC SUPPLY – BACK UP PROTECTION

DC SUPPLY – INTER TRIP

DC SUPPLY – FLASHING CIRCUIT

DC SUPPLY – BUS BAR – PROTECTION RESET

DC SUPPLY – CBF PROTECTION

R

CR

ECC

LOCAL

REMOTE

RESET BUS – ALARM SYSTEM

CONTROL ROOM

ENERGY CONTROL CENTRE

THE LOCATION OF CONTROLLED DEVICE

ANY OTHER LOCATION NOT LOCAL

ON

OFF

A

T

S

CS

CT

LS

LT

LC

LO

RO

CB NORMALLY OPEN AUXILIARY CONTACT

CB NORMALLY CLOSED AUXILIARY CONTACT

COMMON

TEST POSITION

SERVICE POSITION

CLOSE IN SERVICE POSITION

CLOSE IN TEST POSITION

LOCAL SERVICE

LOCAL TEST

LOCAL CLOSE

LOCAL OPEN

REMOTE OPEN

NOTES

LABELS

LUGS

FERULLING

WHITE LABEL WITH BLACK LETTERING WILL BE PROVIDED FOR ALL MOUNTED APPARATUS EQUIPMENT IDENTIFICATION AND FUNCTION REFERENCE LABEL WILL BE PROVIDED FOR FRONT MOUNTED EQUIPMENTS OF THE PANEL AND EQUIPMENT IDENTIFICATION LABEL WILL BE PROVIDED FOR INTERNALLY MOUNTED EQUIPMENTS

A. CT CIRCUITS– RING TYPE

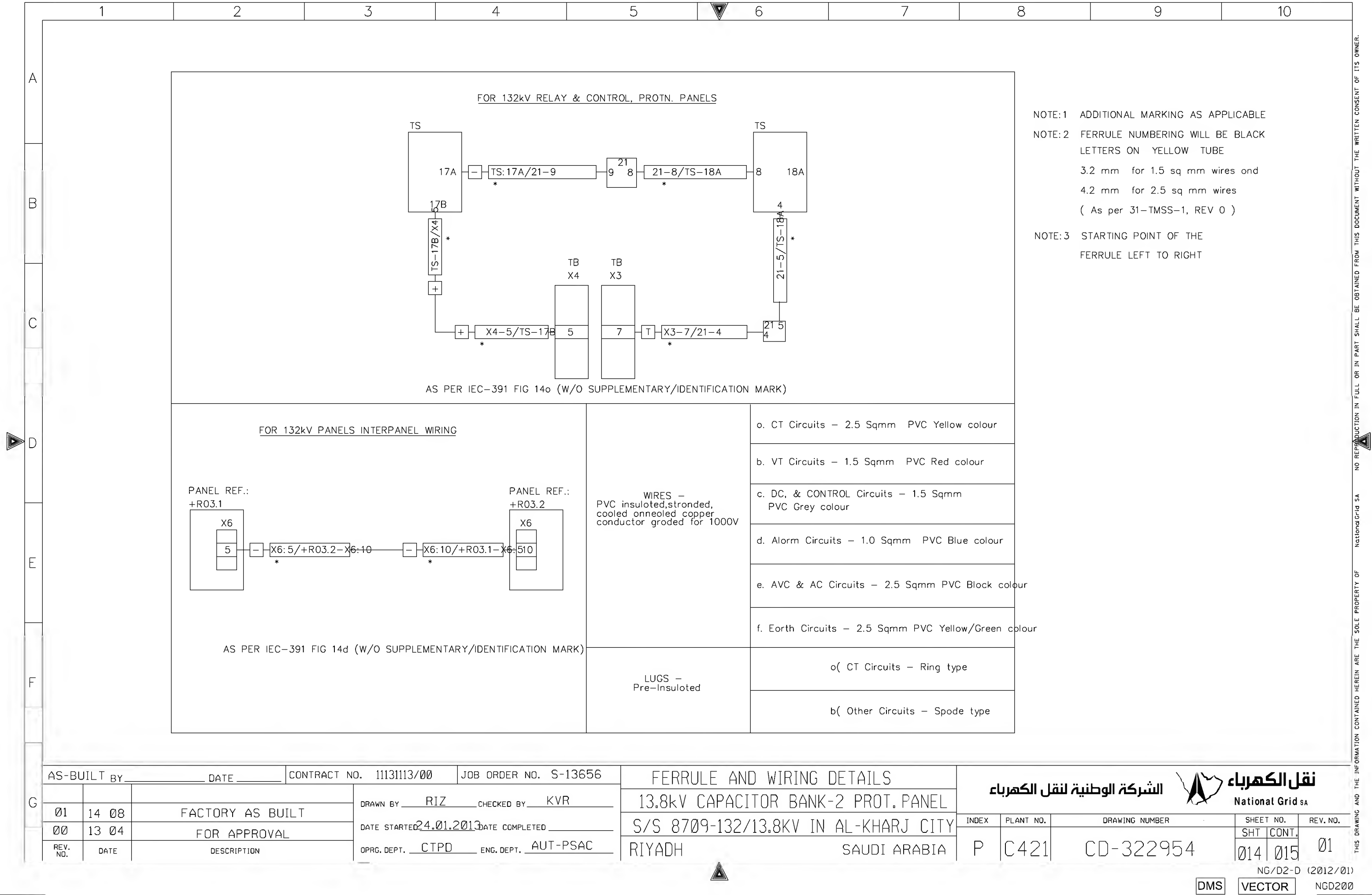
B. OTHER CIRCUITS – SPADE TYPE

YELLO TUBE 3.2 mm FOR 1.5SQ mm WIRES AND 4.2 FOR 2.5 SQ mm WIRES (AS PER 31 – TMSS–1, RE.0)


NG/D2-D (2012/01)

DMS VECTOR

NGD200



	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										


MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
 PROTECTION & SUBSTATION AUTOMATION		SS 8709 132kV RELAY PANELS	
	CD-322928	132/13.8kV GT-1 RELAY PANEL -1	+R05.1
		132/13.8kV GT-1 RELAY PANEL -2	+R05.2
	CD-322931	132/13.8kV GT-2 RELAY PANEL -1	+R01.1
		132/13.8kV GT-2 RELAY PANEL -2	+R01.2
	CD-322934	132/13.8kV GT-3 RELAY PANEL -1	+R04.1
		132/13.8kV GT-3 RELAY PANEL -2	+R04.2
	CD-322936	132/13.8kV TRANSFORMER-1,2& 3 AVC PANEL	+AVC
	CD-322922	132KV SPARE-1 UGF RELAY PANEL -1	+R07.1
		132KV SPARE-1 UGF RELAY PANEL -2	+R07.2
	CD-322916	132KV 8020 UGF RELAY PANEL -1	+R02.1
		132KV 8020 UGF RELAY PANEL -2	+R02.2
	CD-322919	132KV 8710 UGF RELAY PANEL -1	+R03.1
		132KV 8710 UGF RELAY PANEL -2	+R03.2
	CD-322925	132KV SPARE-2 UGF RELAY PANEL -1	+R06.1
		132KV SPARE-2 UGF RELAY PANEL -2	+R06.2
	CD-323012	132KV FOIP PANEL	+FOIP
	CD-322946	132kV BUS COUPLER-A	+R130
	CD-322948	132kV BUS COUPLER-B	+R230
	CD-322950	132kV BUS SECTION	+R120
	CD-322991	132kV BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL	+BB1-1
	CD-322993	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-2
	CD-322995	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-3
	CD-322997	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-4
	CD-322999	132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-5
	CD-323001	132kV BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL	+BB2-1
	CD-323003	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-2
	CD-323005	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-3
	CD-323007	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-4
	CD-323009	132kV BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-5

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	14 08	FACTORY AS BUILT	DRAWN BY RIZ CHECKED BY KVR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	

DRAWING REFERENCES	
13.8kV CAPACITOR BANK-2 PROT. PANEL	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	
P	C421	CD-322954	SHT	REV. NO.
			CONT.	
			015	01

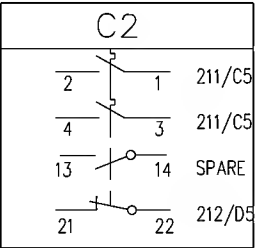
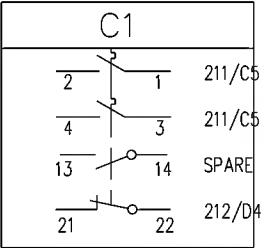
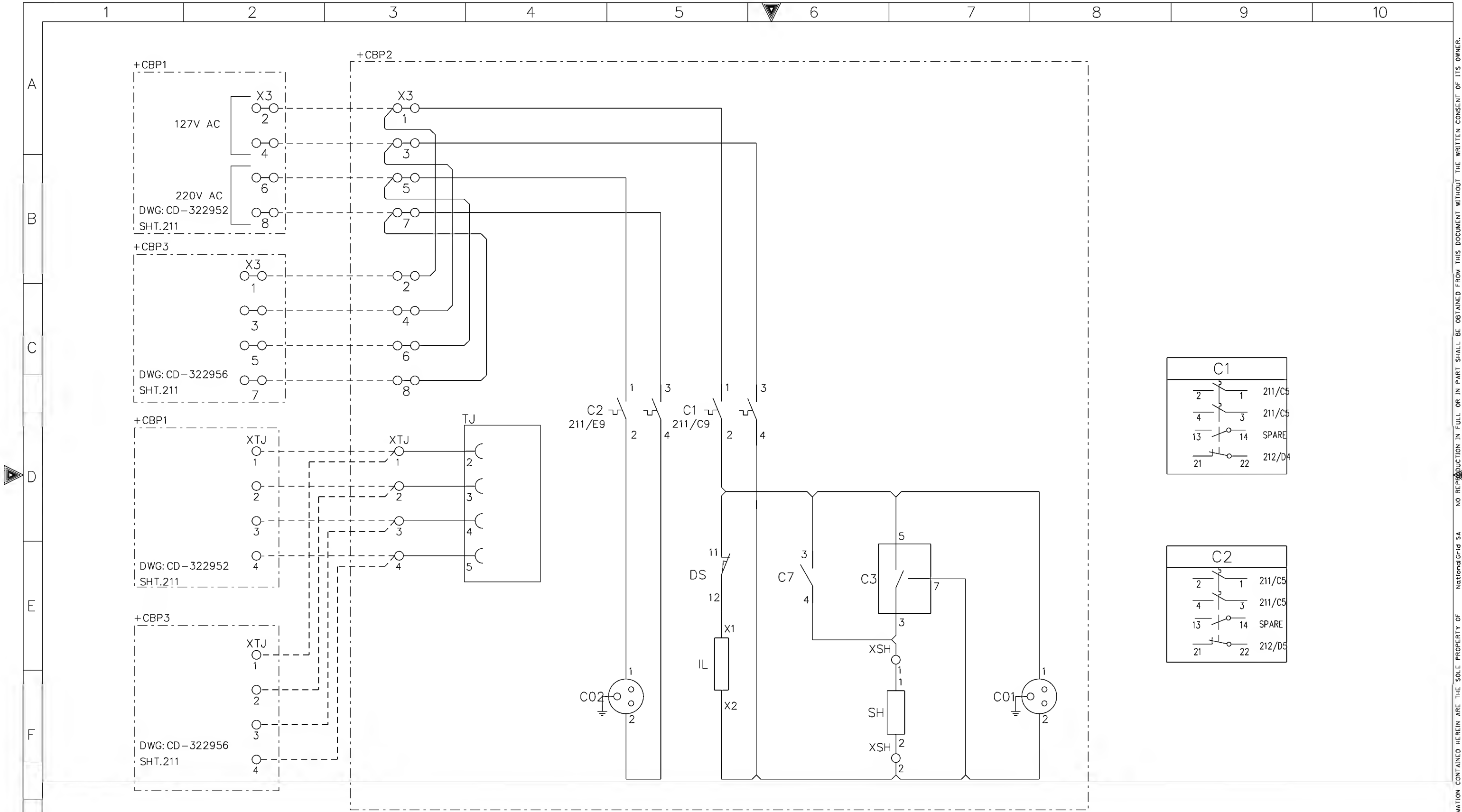
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B										
C										
D										
E										
F										

MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
 PROTECTION & SUBSTATION AUTOMATION		SS 8709 13.8KV RELAY PANELS	
	CD-322952	13.8KV Capacitor Bank-1 Protection Panel	+CBP-1
	CD-322954	13.8KV Capacitor Bank-2 Protection Panel	+CBP-2
	CD-322956	13.8KV Capacitor Bank-2 Protection Panel	+CBP-3
	CD-322958	13.8 KV ACCS PANEL	+ACCS
	CD-322962	13.8KV ACSE PANEL	+ACSE
	CD-322968	13.8KV Under Voltage Load Shedding Panel	+UVLS
	CD-322964	13.8KV Under Frequency Load Shedding Panel-1	+UFLS01
	CD-322966	13.8KV Under Frequency Load Shedding Panel-2	+UFLS02

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	14 08	FACTORY AS BUILT	DRAWN BY RIZ CHECKED BY KVR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	

DRAWING REFERENCES	
13.8kv CAPACITOR BANK-2 PROT. PANEL	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء		
			National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
P	C421	CD-322954	SHT	CONT.	01
			016	211	



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

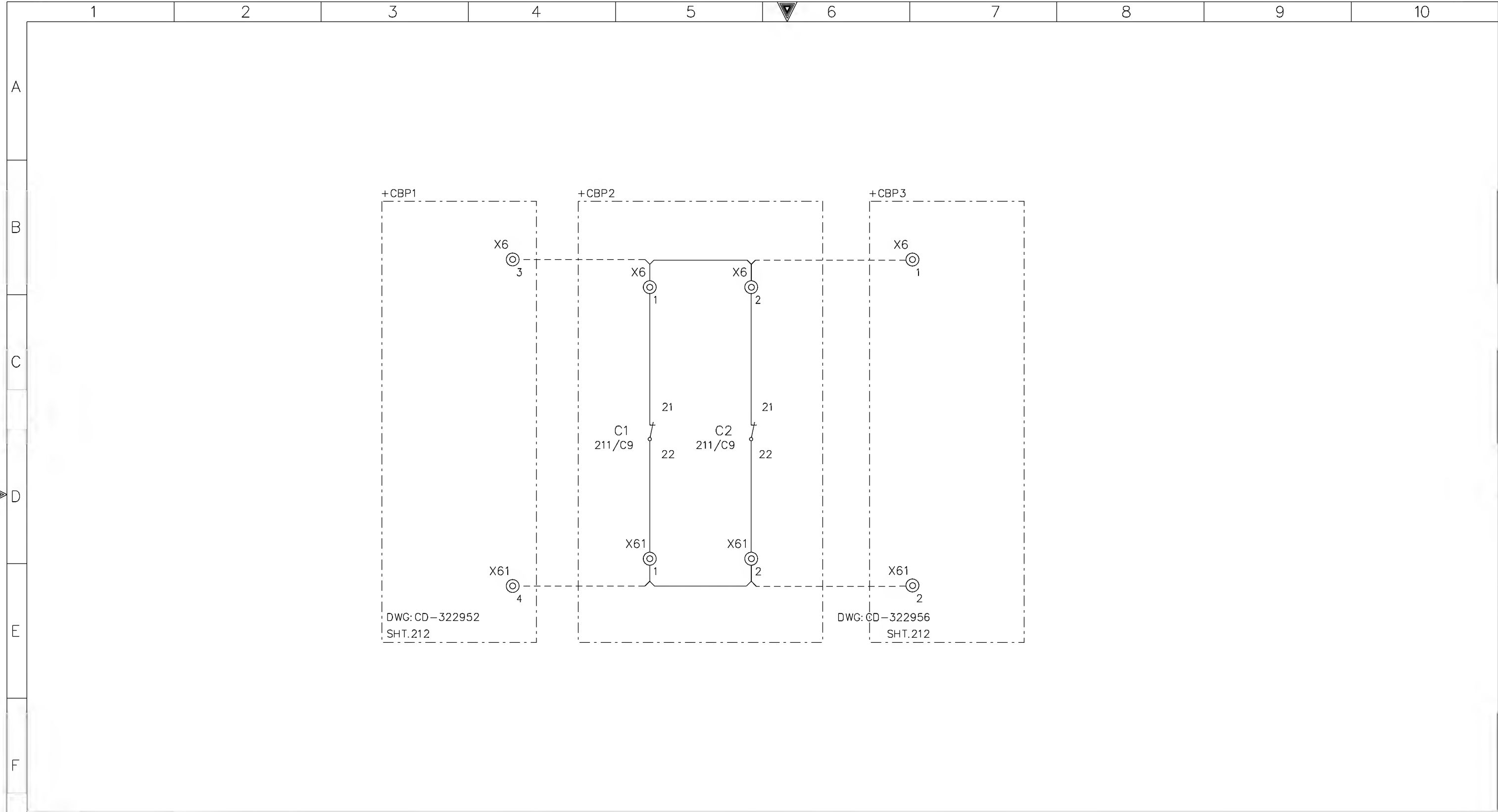
01	14 08	FACTORY AS BUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY	RIZ	CHECKED BY	KVR
DATE STARTED	24.01.2013	DATE COMPLETED	
OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSAC

AC SUPPLY FOR ILLUMINATION & POWER SOCKET
13.8kV CAPACITOR BANK-2 PROT. PANEL
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
P	C421	CD-322954	SHT 211	CONT. 212
				01



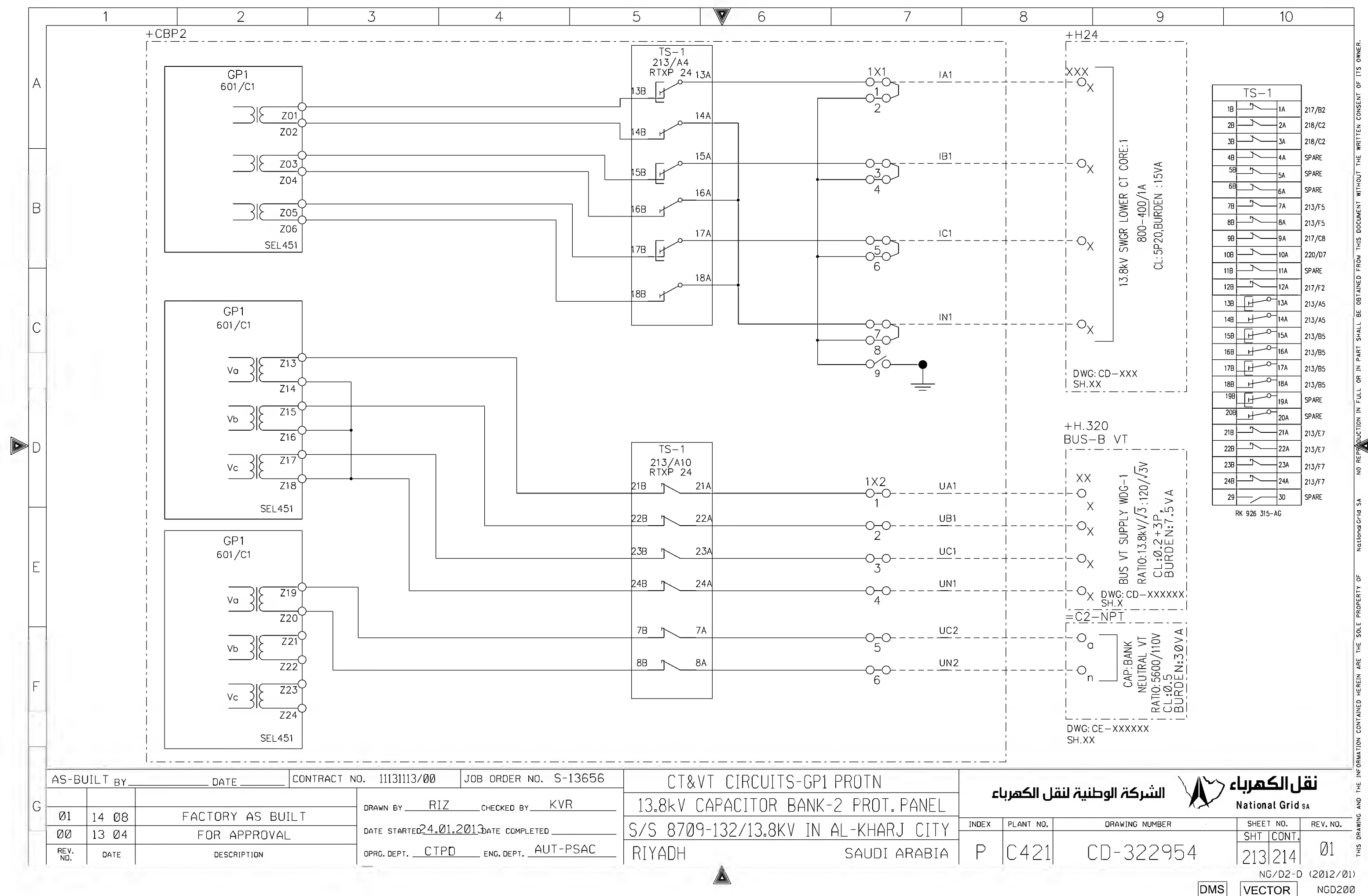
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

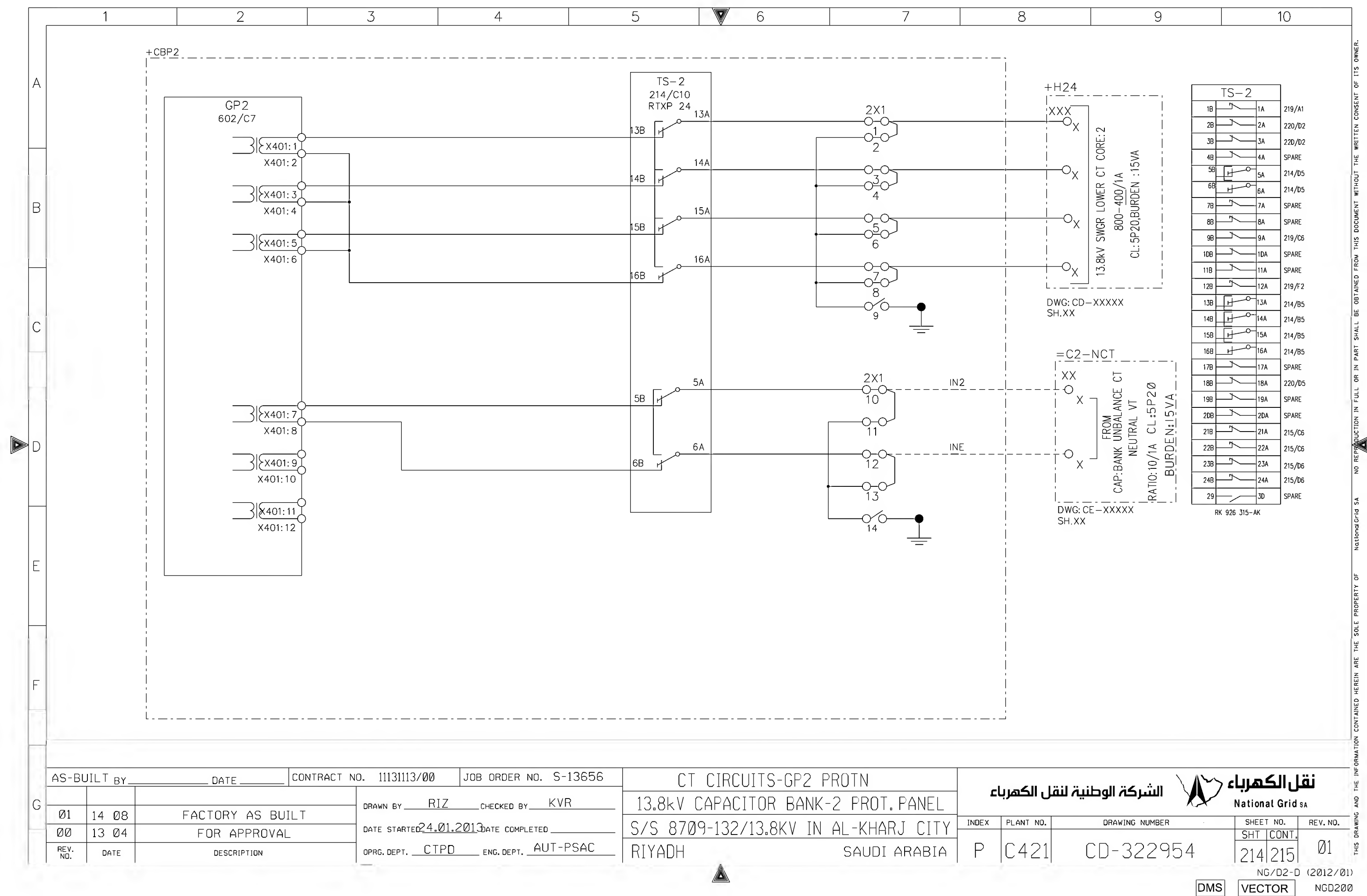
01	14 08	FACTORY AS BUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR
DATE STARTED 24.01.2013 DATE COMPLETED _____
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

AC SUPPLY AUXILARY CONTACTS
13.8kv CAPACITOR BANK-2 PROT. PANEL
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
P	C421	CD-322954		SHT	CONT.
				212	213
				REV. NO.	
				01	

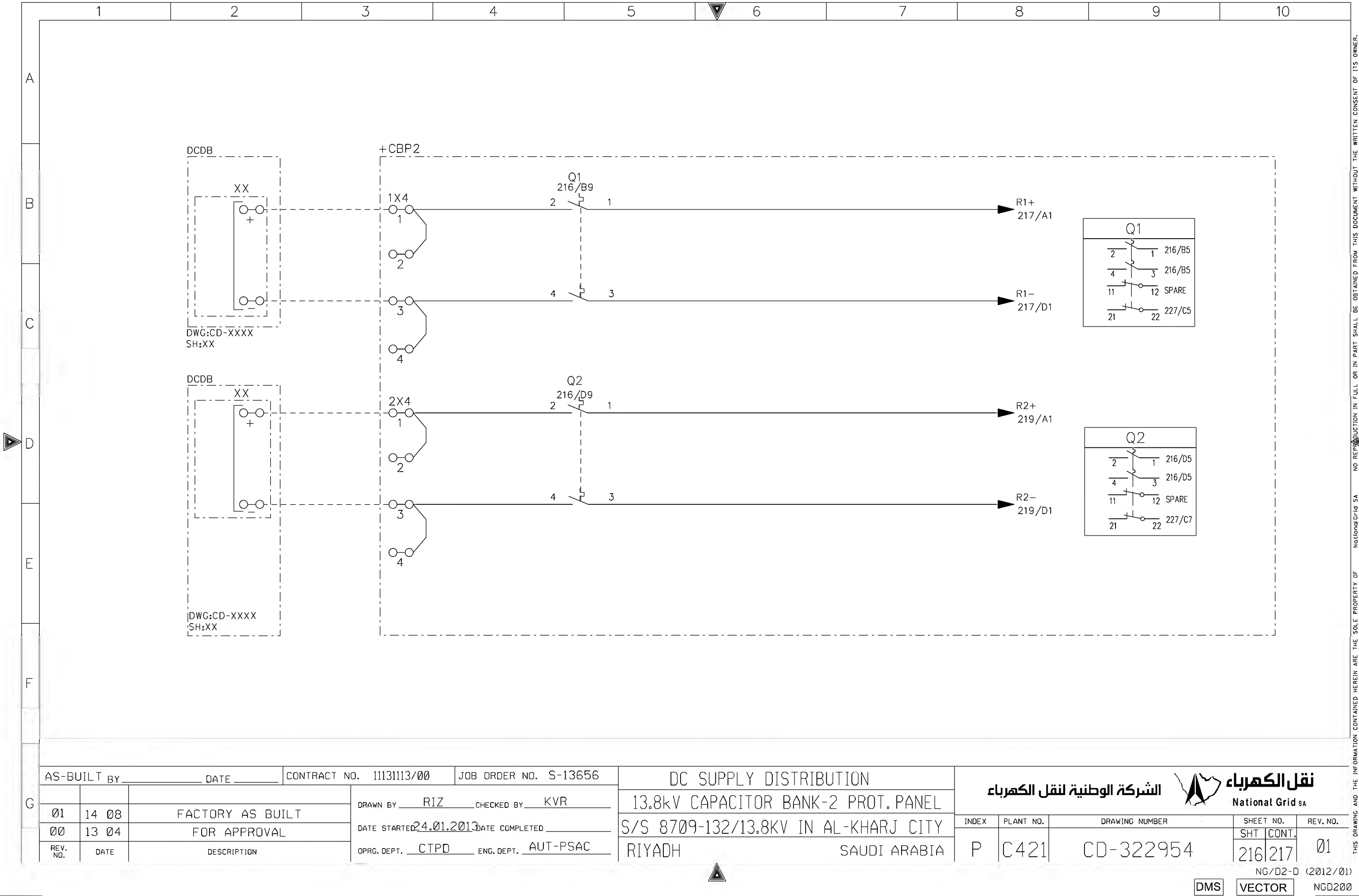




AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	14 08	FACTORY AS BUILT FOR APPROVAL	DRAWN BY RIZ		CHECKED BY KVR	
00	13 04		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

CT CIRCUITS-GP2 PROTN
13.8kV CAPACITOR BANK-2 PROT. PANEL
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
P	C421	CD-322954	SHT 214	CONT. 215
			01	



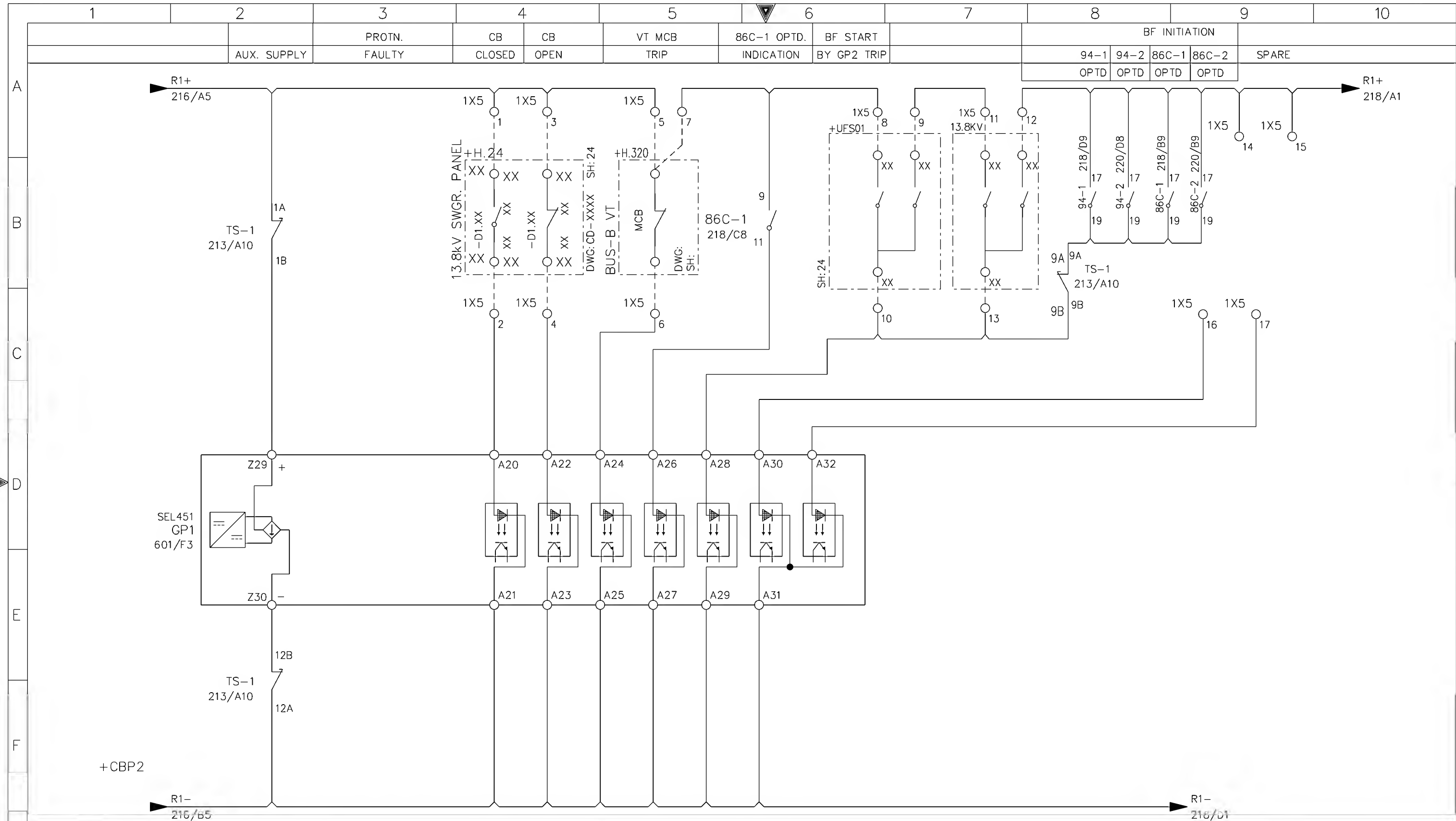
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DC SUPPLY DISTRIBUTION		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
01 14 08			FACTORY AS BUILT		DRAWN BY RIZ CHECKED BY KVR		13.8kV CAPACITOR BANK-2 PROT. PANEL		National Grid sa			
00 13 04			FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.	
REV. NO.			DATE		DESCRIPTION		ORIYADH SAUDI ARABIA		DRAWING NUMBER		SHEET NO.	
									CD-322954		REV. NO.	
									P C421		216/217	
											01	

DMS

VECTOR

NG/D2-D (2012/01)

NGD200



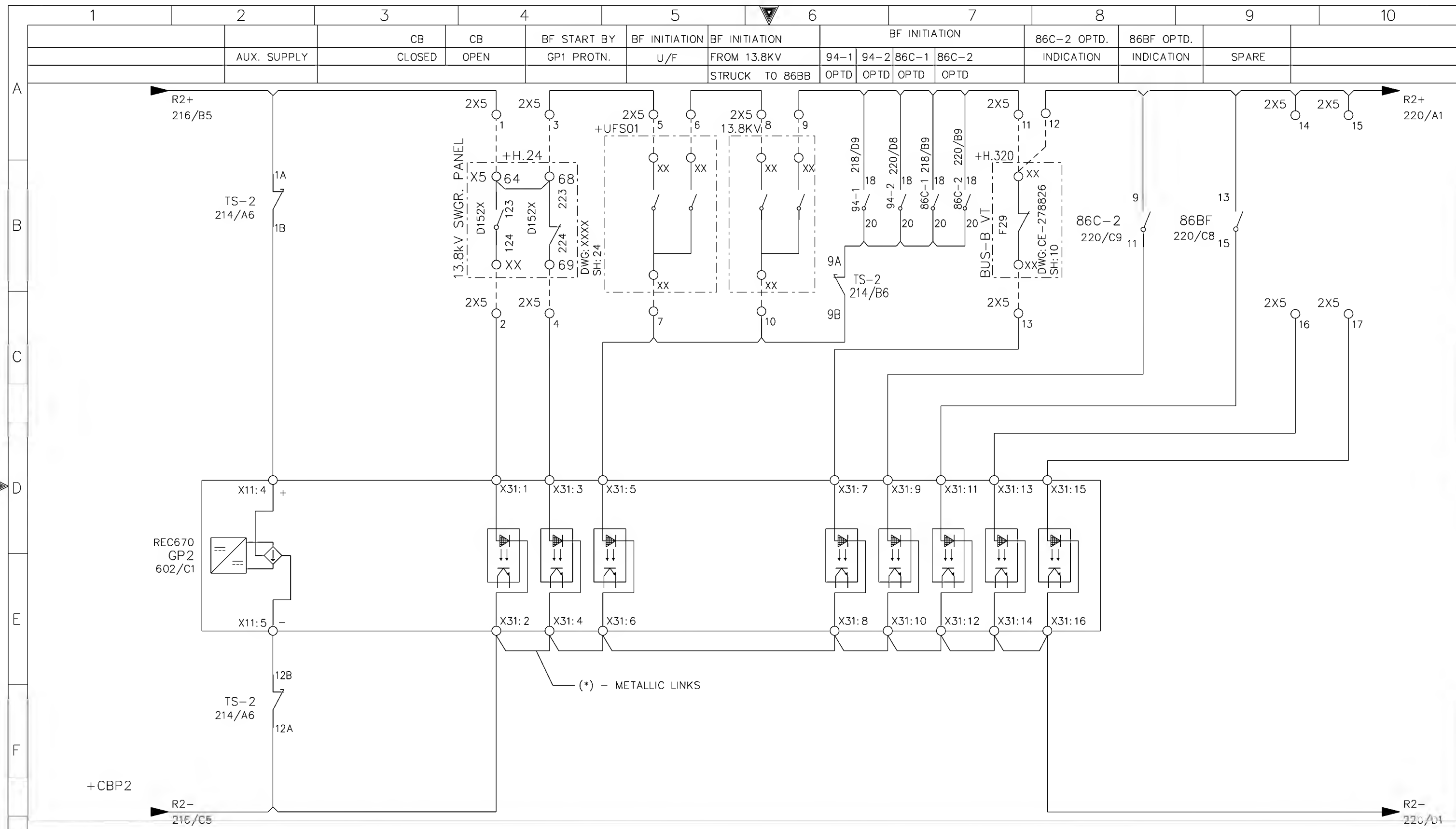
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656


01	14 08	FACTORY AS BUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

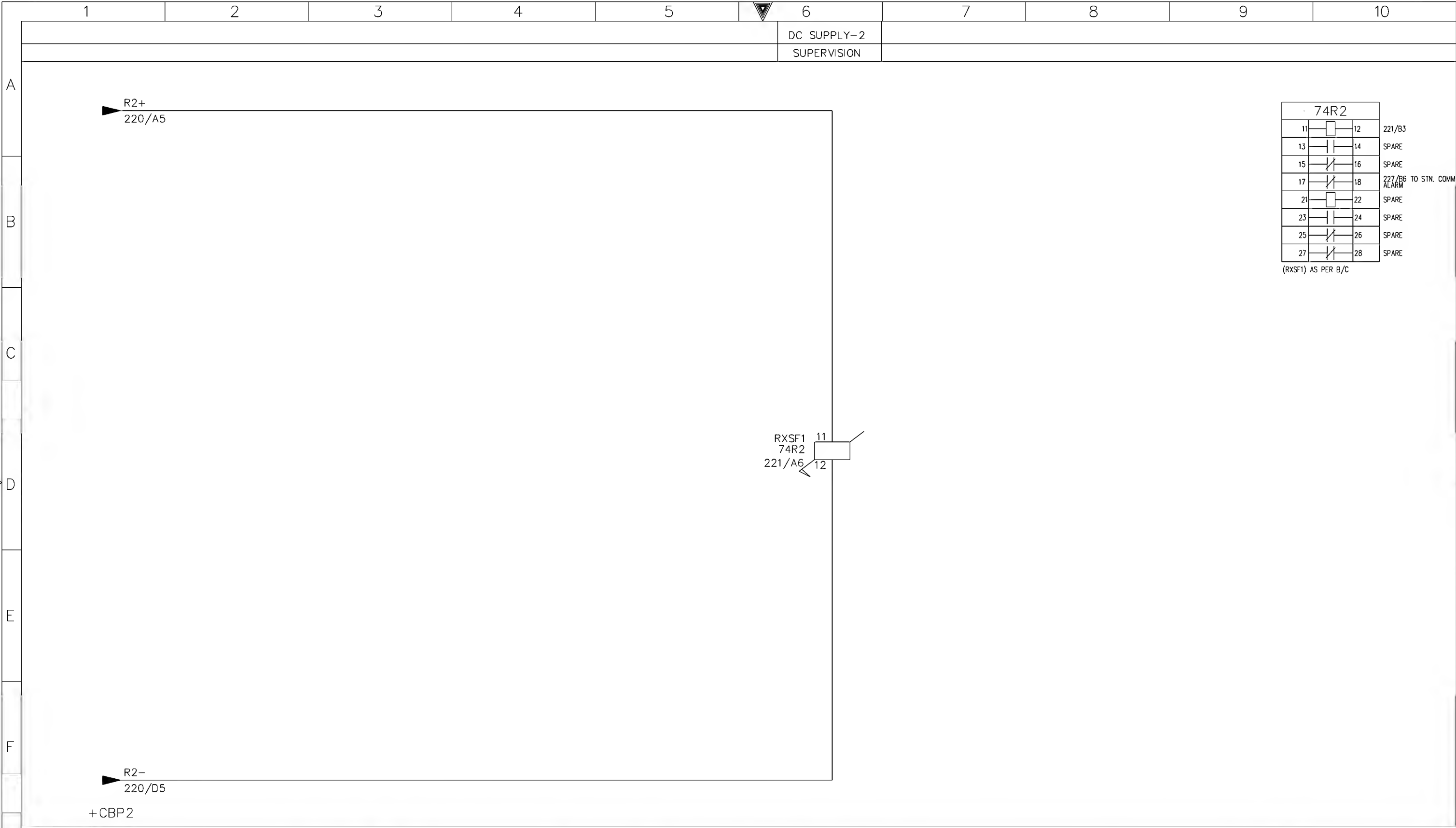
DRAWN BY RIZ CHECKED BY KVR
DATE STARTED 24.01.2013 DATE COMPLETED _____
OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

DC LOGIC CIRCUITS-GP1 PROTECTION
13.8kV CAPACITOR BANK-2 PROT. PANEL
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	REV. NO.
P	C421	CD-322954		217/218	01



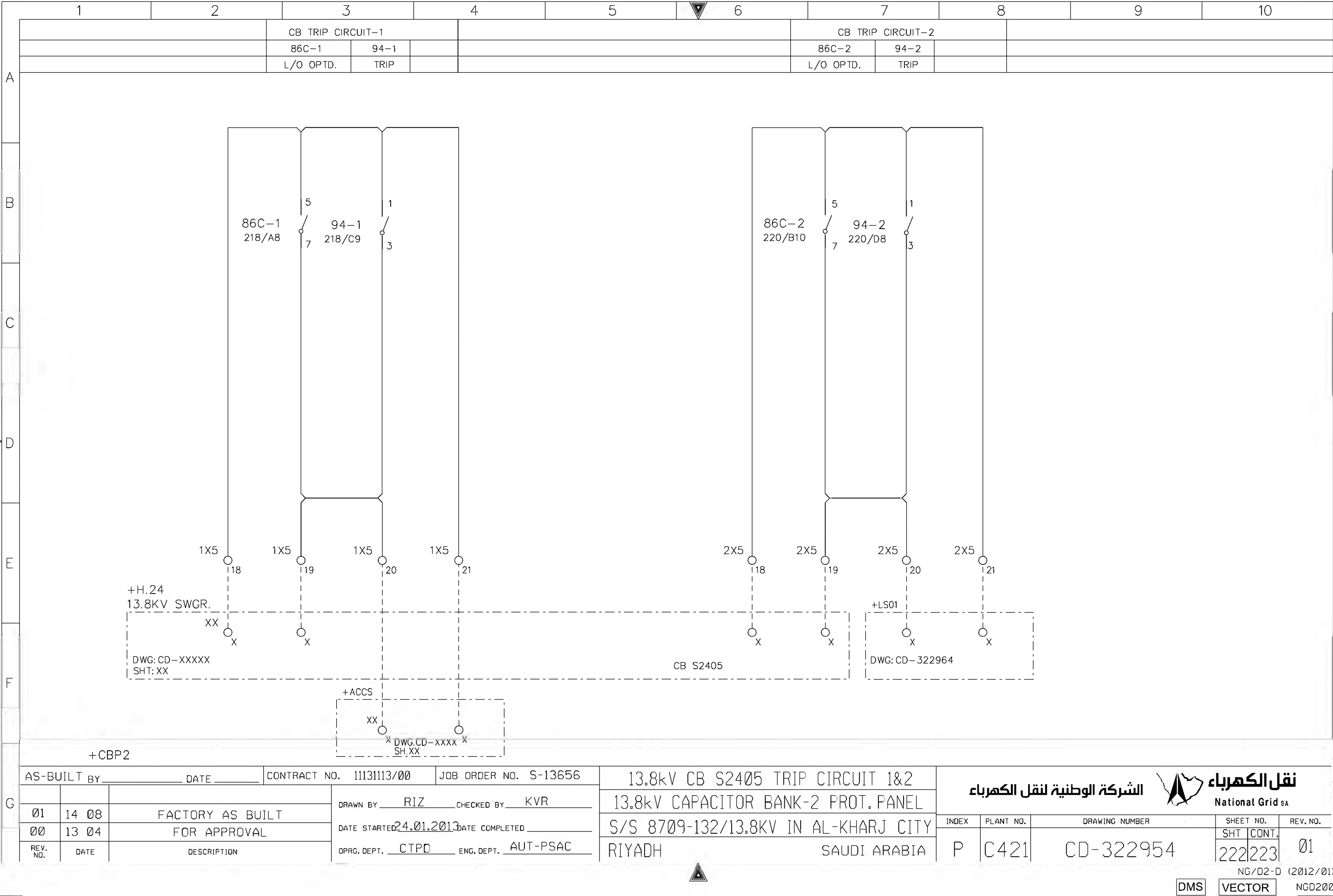
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DC LOGIC CIRCUITS-GP2 PROTECTION		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>									
					DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		13.8kV CAPACITOR BANK-2 PROT. PANEL		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
	01	14 08	FACTORY AS BUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		P	C421	CD-322954	SHT		CONT.		21922001		
	00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA											
	REV. NO.	DATE	DESCRIPTION															



74R2			
11		12	221/B3
13		14	SPARE
15		16	SPARE
17		18	227/B6 ALARM TO STN. COMM
21		22	SPARE
23		24	SPARE
25		26	SPARE
27		28	SPARE

(RXSF1) AS PER B/C

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DC LOGIC CIRCUITS-GP2 PROTECTION		<div>الشركة الوطنية لنقل الكهرباء</div> <div> National Grid sa</div>						
			DRAWN BY _____ RIZ _____ CHECKED BY _____ KVR				13.8kV CAPACITOR BANK-2 PROT. PANEL								
01 14 08 FACTORY AS BUILT			DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
00 13 04 FOR APPROVAL													SHT CONT.		
REV. NO. DATE DESCRIPTION			OPRG. DEPT. _____ CTPD _____		ENG. DEPT. _____ AUT-PSAC		RIYADH SAUDI ARABIA		P	C421	CD-322954		221 222		01



	1	2	3	4	5	6	7	8	9	10
	CLOSE BLOCK									
A										
B										
C										
D										
E										
F										
G										

+CBP2

1X522

XXX

86C-1218/A5

86C-2220/D6

86BF220/B8

1X523

X

CB S2405

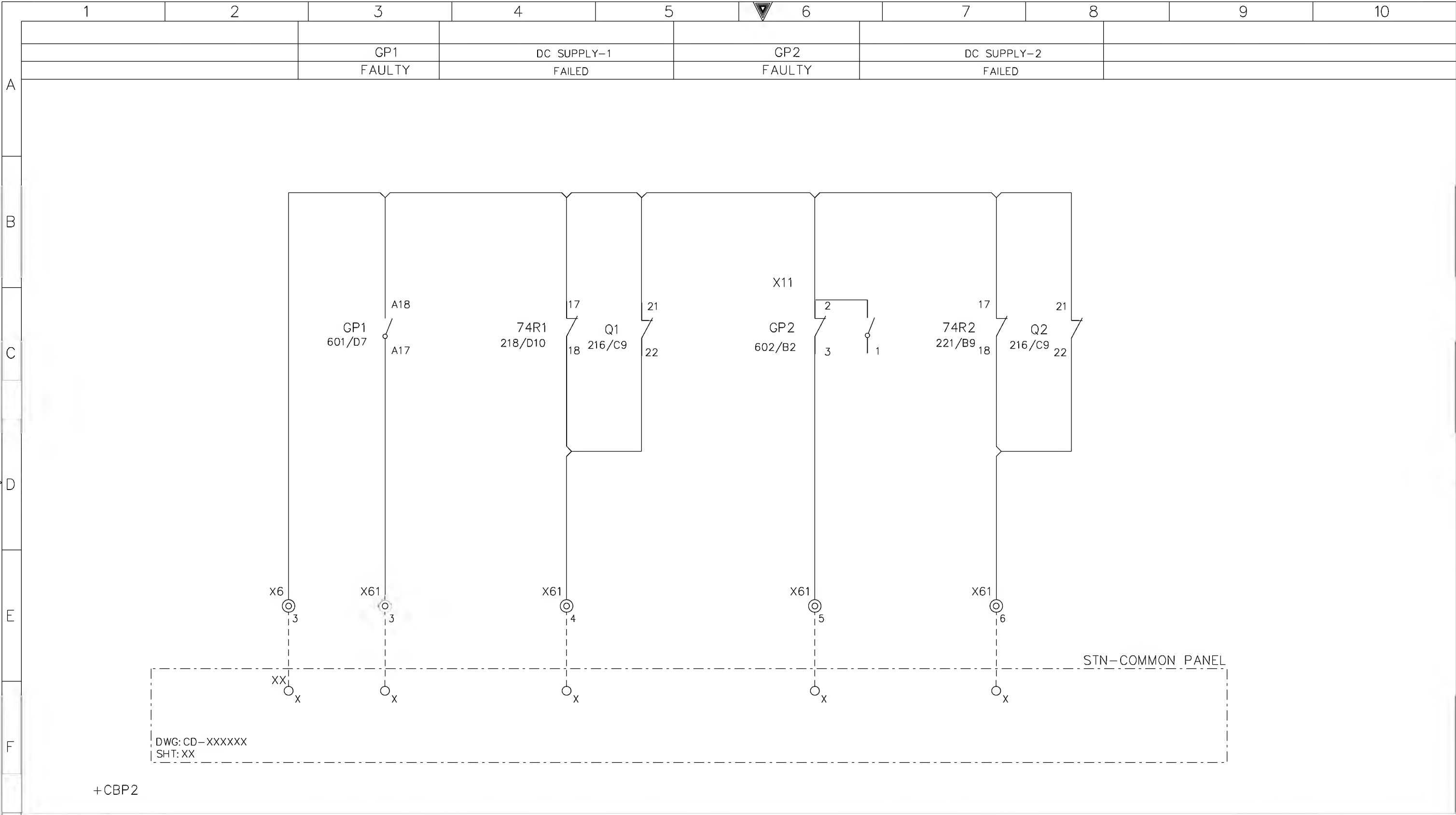
DWG: CD-XXXXX
SHT: XX

+H.24




AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		13.8kv CB S2405 CLOSE BLOCK CIRCUIT		<div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>				
Ø1	14 Ø8	FACTORY AS BUILT		DRAWN BY RIZ CHECKED BY KVR		13.8kv CAPACITOR BANK-1 PROT.PANEL						
Ø0	13 Ø4	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		P	C421	CD-322954	223224	Ø1

NG/D2-D (2012/01)

DMS VECTOR NGD200



AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		STATION COMMON ALARM CIRCUITS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>					
			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		13.8kV CAPACITOR BANK-2 PROT. PANEL									
01	14 08	FACTORY AS BUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		P	C421	CD-322954		SHT	CONT.	01
REV. NO.	DATE	DESCRIPTION										227	231	

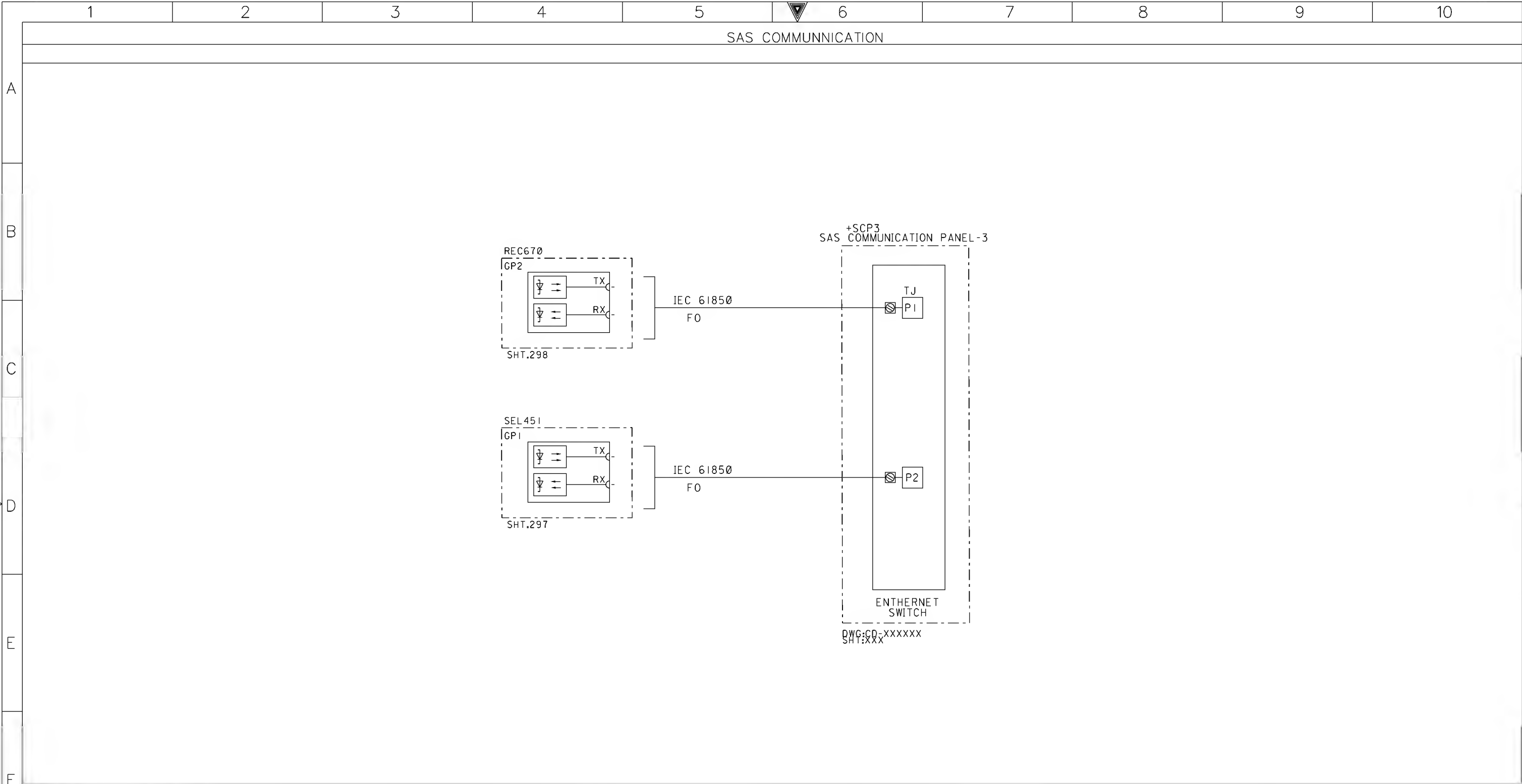
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A	CAP. BANK PROTN. TRIP																																																																																						
		GP1	GP2	BF	BF																																																																																		
		PROTN.	PROTN.	STG-1	STG-2																																																																																		
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D	<div><div><div><div><div>X9 1</div><div>94-1 218/D9</div><div>14</div><div>16</div></div><div><div>X9 2</div><div>94-2 220/B5</div><div>14</div><div>16</div></div><div><div>X9 3</div><div>GP2 602/C1</div><div>X42:15</div><div>X42:16</div></div><div><div>X9 4</div><div>GP2 602/C1</div><div>X42:17</div><div>X42:18</div></div></div><div><div>X9 5</div><div></div><div></div><div></div></div><div><div>X9 6</div><div></div><div></div><div></div></div><div><div>X9 7</div><div></div><div></div><div></div></div><div><div>X9 8</div><div></div><div></div><div></div></div></div></div>																																																																																						
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G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="2">SPARE CONTACTS</td><td colspan="2"><div>الشركة الوطنية لنقل الكهرباء</div><div> نقل الكهرباء National Grid sa</div></td></tr><tr><td></td><td></td><td></td><td colspan="2">DRAWN BY <u> RIZ </u> CHECKED BY <u> KVR </u></td><td colspan="2">13.8kV CAPACITOR BANK-2 PROT. PANEL</td><td colspan="2">13.8kV CAPACITOR BANK-2 PROT. PANEL</td><td colspan="2"></td></tr><tr><td>01</td><td>14 08</td><td colspan="2">FACTORY AS BUILT</td><td colspan="2">DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____</td><td colspan="2">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td><td colspan="2">INDEX</td><td>PLANT NO.</td></tr><tr><td>00</td><td>13 04</td><td colspan="2">FOR APPROVAL</td><td colspan="2">OPRG. DEPT. <u> CTPD </u> ENG. DEPT. <u> AUT-PSAC </u></td><td colspan="2">RIYADH SAUDI ARABIA</td><td colspan="2">DRAWING NUMBER</td><td>SHEET NO.</td></tr><tr><td>REV. NO.</td><td>DATE</td><td colspan="2">DESCRIPTION</td><td colspan="2"></td><td colspan="2"></td><td colspan="2">P C421</td><td>CD-322954</td></tr><tr><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2">231</td><td>245</td></tr><tr><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td>01</td></tr></table>										AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		SPARE CONTACTS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>					DRAWN BY <u> RIZ </u> CHECKED BY <u> KVR </u>		13.8kV CAPACITOR BANK-2 PROT. PANEL		13.8kV CAPACITOR BANK-2 PROT. PANEL				01	14 08	FACTORY AS BUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.	00	13 04	FOR APPROVAL		OPRG. DEPT. <u> CTPD </u> ENG. DEPT. <u> AUT-PSAC </u>		RIYADH SAUDI ARABIA		DRAWING NUMBER		SHEET NO.	REV. NO.	DATE	DESCRIPTION						P C421		CD-322954									231		245											01
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		SPARE CONTACTS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>																																																																														
			DRAWN BY <u> RIZ </u> CHECKED BY <u> KVR </u>		13.8kV CAPACITOR BANK-2 PROT. PANEL		13.8kV CAPACITOR BANK-2 PROT. PANEL																																																																																
01	14 08	FACTORY AS BUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX		PLANT NO.																																																																													
00	13 04	FOR APPROVAL		OPRG. DEPT. <u> CTPD </u> ENG. DEPT. <u> AUT-PSAC </u>		RIYADH SAUDI ARABIA		DRAWING NUMBER		SHEET NO.																																																																													
REV. NO.	DATE	DESCRIPTION						P C421		CD-322954																																																																													
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NG/D2-D (2012/01)

DMS

VECTOR

NGD20



AS-BUILT BY _____ DATE _____

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

01

14 08

FACTORY AS BUILT

00

13 04

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY RIZ

CHECKED BY KVR

DATE STARTED 24.01.2013

DATE COMPLETED _____

OPRG. DEPT. CTPD

ENG. DEPT. AUT-PSAC

SAS COMMUNICATION

13.8kV CAPACITOR BANK-2 PROT. PANEL

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH

SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

National Grid sa

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

SHT

CONT.

REV. NO.

P

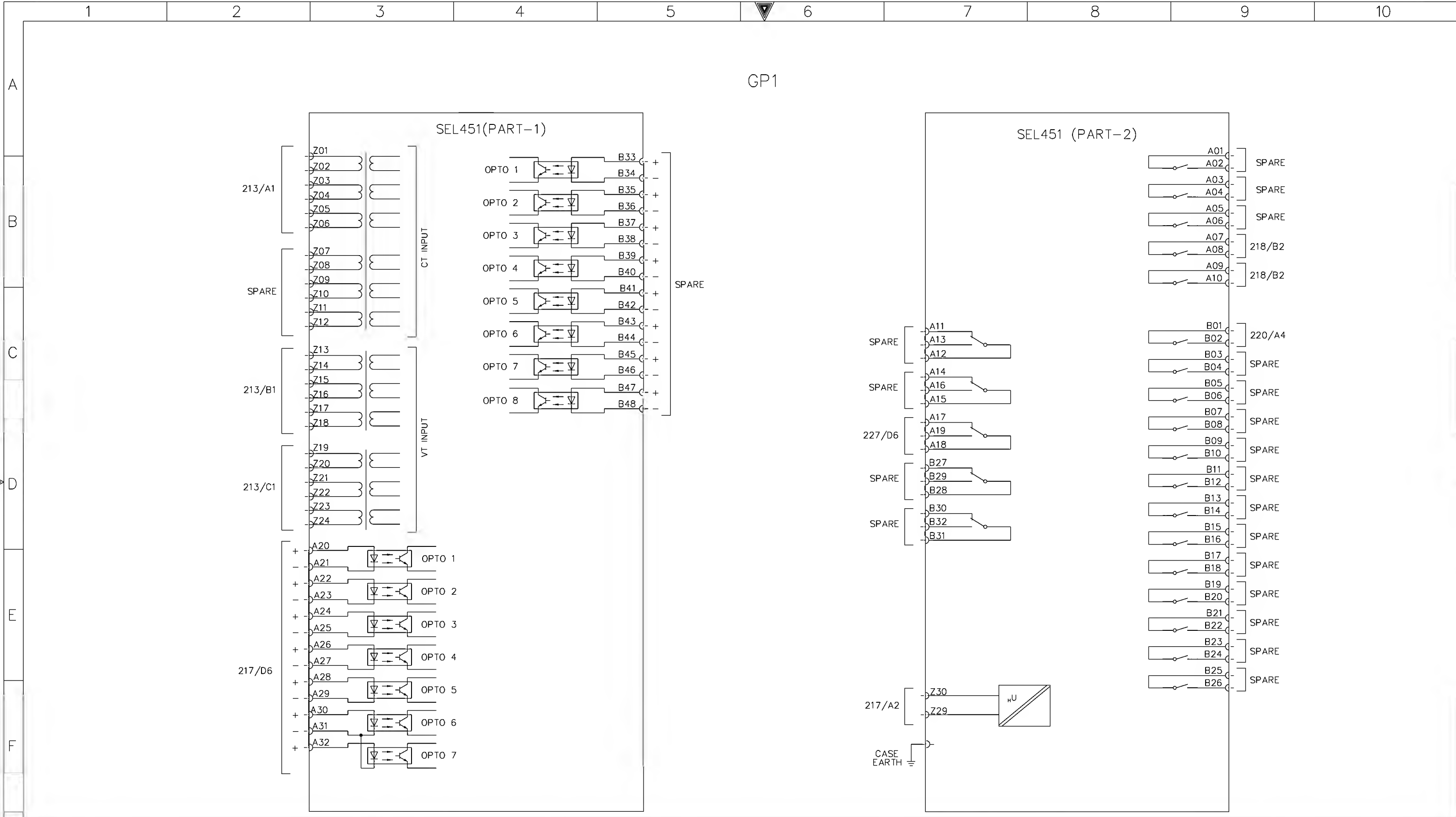
C421

CD-322954

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601

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AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	14 08	FACTORY AS BUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

BLOCK REFERENCE-GP1

13.8kV CAPACITOR BANK-2 PROT. PANEL

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH

SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



National Grid sa


INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
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NG/D2-D (2012/01)

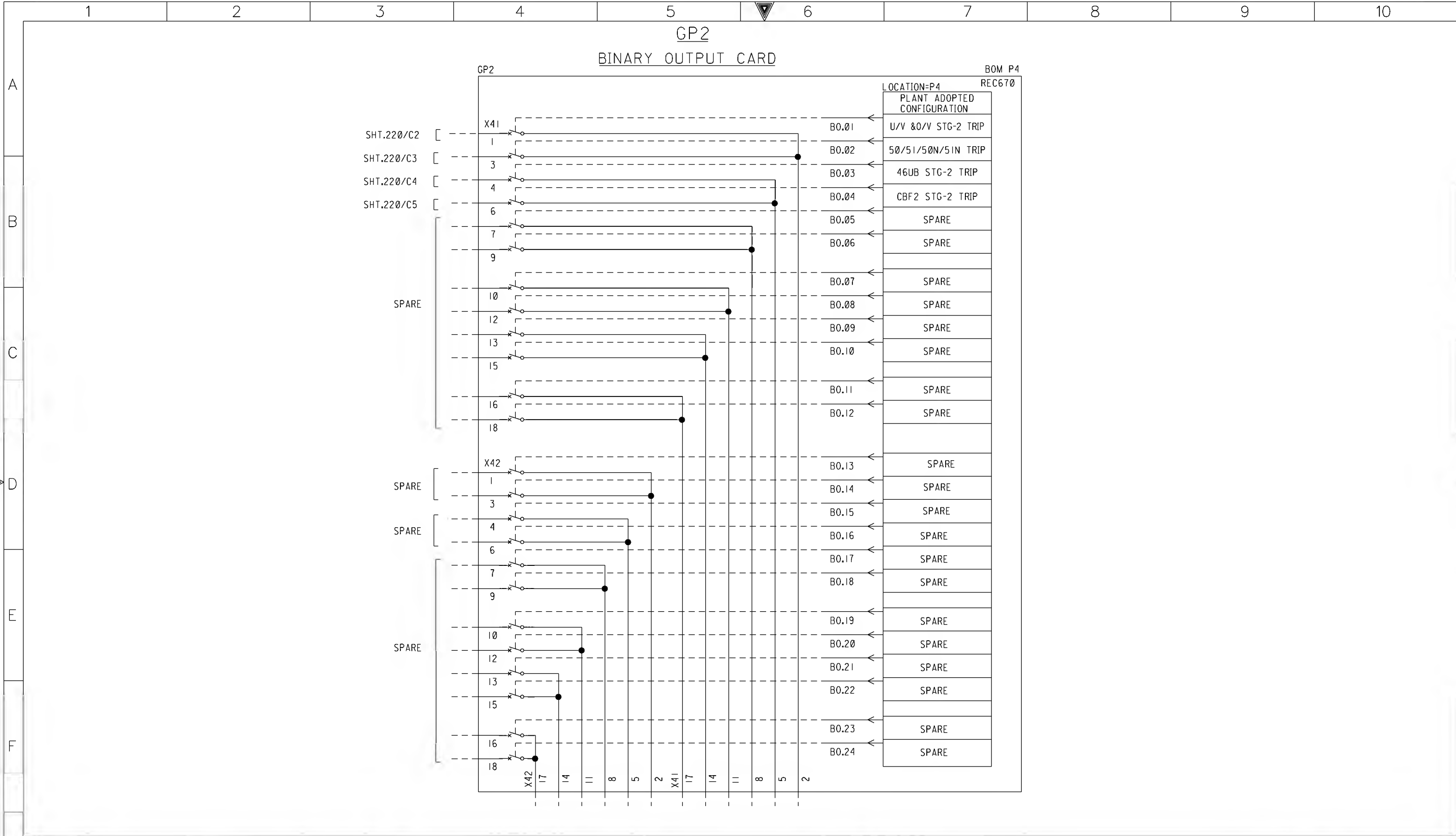
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REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

BLOCK REFERENCE -GP2	
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S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

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				604	605
				REV. NO.	
				01	

